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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Initial application of: Foote et al.

Attorney Docket No.: SUN1P510/P6387

Patent: 7,073,177 B2

Issued: July 4, 2006

Title: RESOURCE MANAGING SYSTEM FOR  
CHANGING RESOURCE CONSUMPTION  
STATE OF THE LOWER PRIORITY RESOURCE  
ENTITY TO MORE RESTRICTIVE STATE  
WHEN RESOURCE REACHED CRITICAL  
LEVEL

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail on August 25, 2006 in an envelope addressed to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450.

Signed:

Aurelia M. Sanchez

**REQUEST FOR CERTIFICATE OF CORRECTION  
OF OFFICE MISTAKE  
(35 U.S.C. §254, 37 CFR §1.322)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450  
Attn: Certificate of Correction

Dear Sir:

Attached is Form PTO-1050 (Certificate of Correction) at least one copy of which is suitable for printing. The errors together with the exact page and line number where the errors are shown correctly in the application file are as follows:

**SPECIFICATION:**

1. Column 4, line 23, change "necessarily" to --unnecessarily--. This appears correctly in the patent application as filed on October 26, 2001, on page 9, line 11.
2. Column 9, line 23, change "intention" to --invention--. This appears correctly in the patent application as filed on October 26, 2001, on page 19, line 11.
3. Column 10, line 7, change "system 1330" to --system 1030--. This appears correctly in the patent application as filed on October 26, 2001, on page 21, line 6.

*Certificate  
AUG 31 2006  
of Correction*

SEP 01

**CLAIMS:**

1. In line 1 of claim 41 (column 16, line 1) add --in-- after "recited". This appears correctly in Amendment AF as filed on April 25, 2005, on page 11, claim 44, line 1.

Patentee hereby requests expedited issuance of the Certificate of Correction because the error lies with the Office and because the error is clearly disclosed in the records of the Office. As required for expedited issuance, enclosed is documentation that unequivocally supports the patentee's assertion without needing reference to the patent file wrapper.

It is noted that the above-identified errors were printing errors that apparently occurred during the printing process. Accordingly, it is believed that no fees are due in connection with the filing of this Request for Certificate of Correction. However, if it is determined that any fees are due, the Commissioner is hereby authorized to charge such fees to Deposit Account 500388 (Order No. SUN1P510).

Respectfully submitted,  
BEYER WEAVER & THOMAS, LLP



Steve D Beyer  
Registration No. 31, 234

P.O. Box 70250  
Oakland, CA 94612-0250  
650-961-8300

SEP 01 2005  
2005  
2005

## DETAILED DESCRIPTION OF THE EMBODIMENTS

Reference will now be made in detail to specific embodiments of the invention. While the invention will be described in conjunction with specific embodiments, it will be understood that it is not intended to limit the invention to the 5 described embodiments. On the contrary, it is intended to cover alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. The present invention may be practiced without some or all of 10 these specific details. In other instances, well known process operations have not been described in detail in order not to ~~unnecessarily obscure~~ the present invention.

In general, the invention pertains to methods and apparatus for a resource manager to individually manage multiple resource entities that each consume one or more resources, such as the Java heap. That is, the resource manager may request a 15 selected resource entity (RE) to change its resource consumption state based on specific criteria. By way of example, the criteria for selecting an RE and/or the specific type of state change for the selected RE may include the current resource consumption state of each RE. In one case, the RE that is in a least restrictive resource consumption state (*i.e.*, that will likely result in more resources being 20 consumed by this RE than a more restricted RE) is selected and asked to change its resource consumption state to a more restrictive state (*i.e.*, that will likely result in less resources being consumed by the selected RE). In another example, the criteria includes RE priority, and the RE that has the lowest priority is selected and requested to change its resource consumption state to a more restrictive state.

SEP 01

If the selected RE is associated with a parent application, the first resource manager 402 performs an episode with the selected RE and the selected RE's associated application (e.g., 412) performs a second episode with one or more selected children RE in operation 512. In other words, the associated application serves as a  
5 resource manager of its underlying RE's. If the selected RE is not associated with a parent of another underlying RE, the first resource manager 402 performs an episode with only the selected RE in operation 514. The episodes may include any suitable resource management policies being implemented on a selected RE, for example, as described above with respect to Figure 3. The procedure 500 then repeats.

10       Figure 6 illustrates a typical, general-purpose computer system suitable for implementing the present invention. The computer system 1030 includes any number of processors 1032 (also referred to as central processing units, or CPUs) that are coupled to memory devices including primary storage devices 1034 (typically a read only memory, or ROM) and primary storage devices 1036 (typically a random access  
15       memory, or RAM). The computer system may take any suitable form. For example, the computer system may be integrated with a navigational system or television set top box.

Computer system 1030 or, more specifically, CPUs 1032, may be arranged to support a virtual machine, as will be appreciated by those skilled in the art. One  
20       example of a virtual machine that is supported on computer system 1030 will be described below with reference to Figure 7. As is well known in the art, ROM acts to transfer data and instructions uni-directionally to the CPUs 1032, while RAM is used typically to transfer data and instructions in a bi-directional manner. CPUs 1032 may generally include any number of processors. Both primary storage devices 1034, 1036

for example, in the form of a computer data signal embodied in a carrier wave. The above-described devices and materials will be familiar to those of skill in the computer hardware and software arts.

As previously mentioned, a virtual machine may execute on computer system 1030. Figure 7 is a diagrammatic representation of a virtual machine which is supported by computer system 1030 of Figure 6, and is suitable for implementing the present invention. When a computer program, *e.g.*, a computer program written in the Java™ programming language, is executed, source code 1110 is provided to a compiler 1120 within compile-time environment 1105. Compiler 1120 translates source code 1110 into byte codes 1130. In general, source code 1110 is translated into byte codes 1130 at the time source code 1110 is created by a software developer.

Byte codes 1130 may generally be reproduced, downloaded, or otherwise distributed through a network, *e.g.*, network 1012 of Figure 6, or stored on a storage device such as primary storage 1034 of Figure 6. In the described embodiment, byte codes 1130 are platform independent. That is, byte codes 1130 may be executed on substantially any computer system that is running on a suitable virtual machine 1140.

Byte codes 1130 are provided to a runtime environment 1135 which includes virtual machine 1140. Runtime environment 1135 may generally be executed using a processor or processors such as CPUs 1032 of Figure 6. Virtual machine 1140 includes a compiler 1142, an interpreter 1144, and a runtime system 1146. Byte codes 1130 may be provided either to compiler 1142 or interpreter 1144.

When byte codes 1130 are provided to compiler 1142, methods contained in byte codes 1130 are compiled into machine instructions. In one embodiment,

when it is determined to request the selected resource entity a second time, requesting by the resource manager that the selected resource entity a second time to change its resource consumption state to the previously requested more restrictive state.

41. (Original) A computer system as recited in claim 40, wherein when it is determined not to request the selected resource entity a second time, terminating the selected resource entity.

42. (Original) A computer system as recited in claim 41, wherein determining whether to request the selected resource entity a second time is based on whether the selected resource entity has failed to change its resource consumption when requested to do so within a predetermined time limit.

43. (Original) A computer system as recited in claim 41, wherein determining whether to request the selected resource entity a second time is based on whether a resource is still at a critical level.

44. (Previously Presented) A computer system as recited in claim 41, wherein determining whether to request the selected resource entity a second time is based on whether a second resource entity is operable to be selected and requested to change its resource consumption to a more restrictive state.

45. (Original) A computer system as recited in claim 41, wherein determining whether to request the selected resource entity a second time is based on whether the selected resource entity has indicated a reduction in resource usage.

APP 01

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB Control number

(Also Form PT-1050)

## UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO. : 7,073,177 B2

Page 1 of 1

DATED : July 4, 2006

INVENTOR(S) : Foote et al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

### In the Specification:

Column 4, line 23, change "necessarily" to --unnecessarily--.

Column 9, line 23, change "intention" to --invention--.

Column 10, line 7, change "system 1330" to --system 1030--.

### In the Claims:

In line 1 of claim 41 (column 16, line 1) add --in-- after "recited".

MAILING ADDRESS OF SENDER:

PATENT NO. 7,073,177 B2

**Steve D Beyer**  
BEYER WEAVER & THOMAS, LLP  
P.O. Box 70250  
Oakland, CA 94612-0250

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